



Overview of Southern California Congestion and Quantification of Operational Benefits Status Report

2005 ENERGY REPORT COMMITTEE WORKSHOP
FOR CORRIDORS AND STRATEGIC PLAN UPDATE #1

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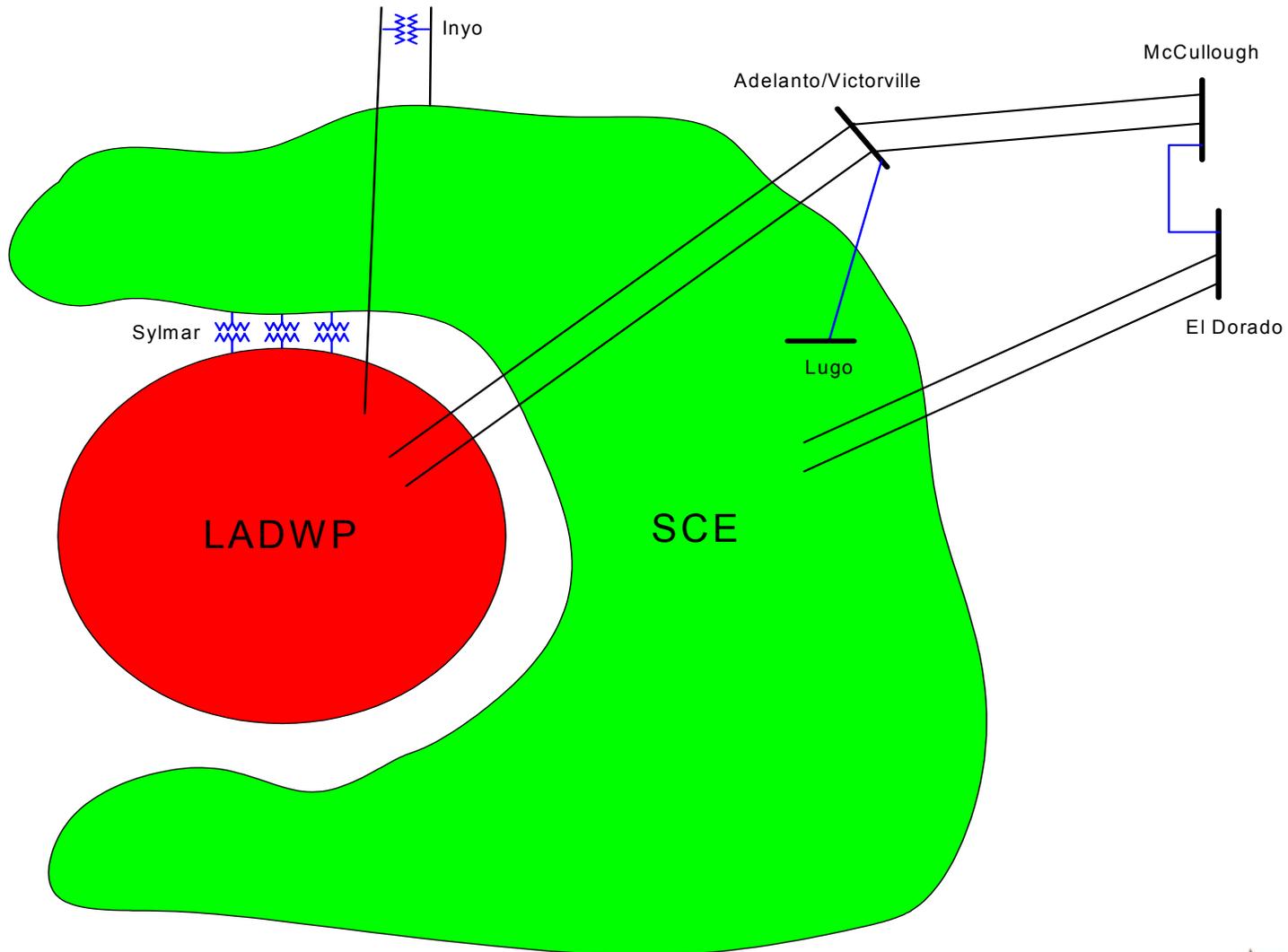
Navigant Consulting, Inc.

Overview

- » Update on Reliability Benefits of Economic Transmission Projects
- » Background on Transfer Capability between LADWP and Southern California Edison
- » Update/Background on Southern California Transmission Congestion

LA to SCE Transfer Paths

Existing Interconnections Between SCE and LADWP



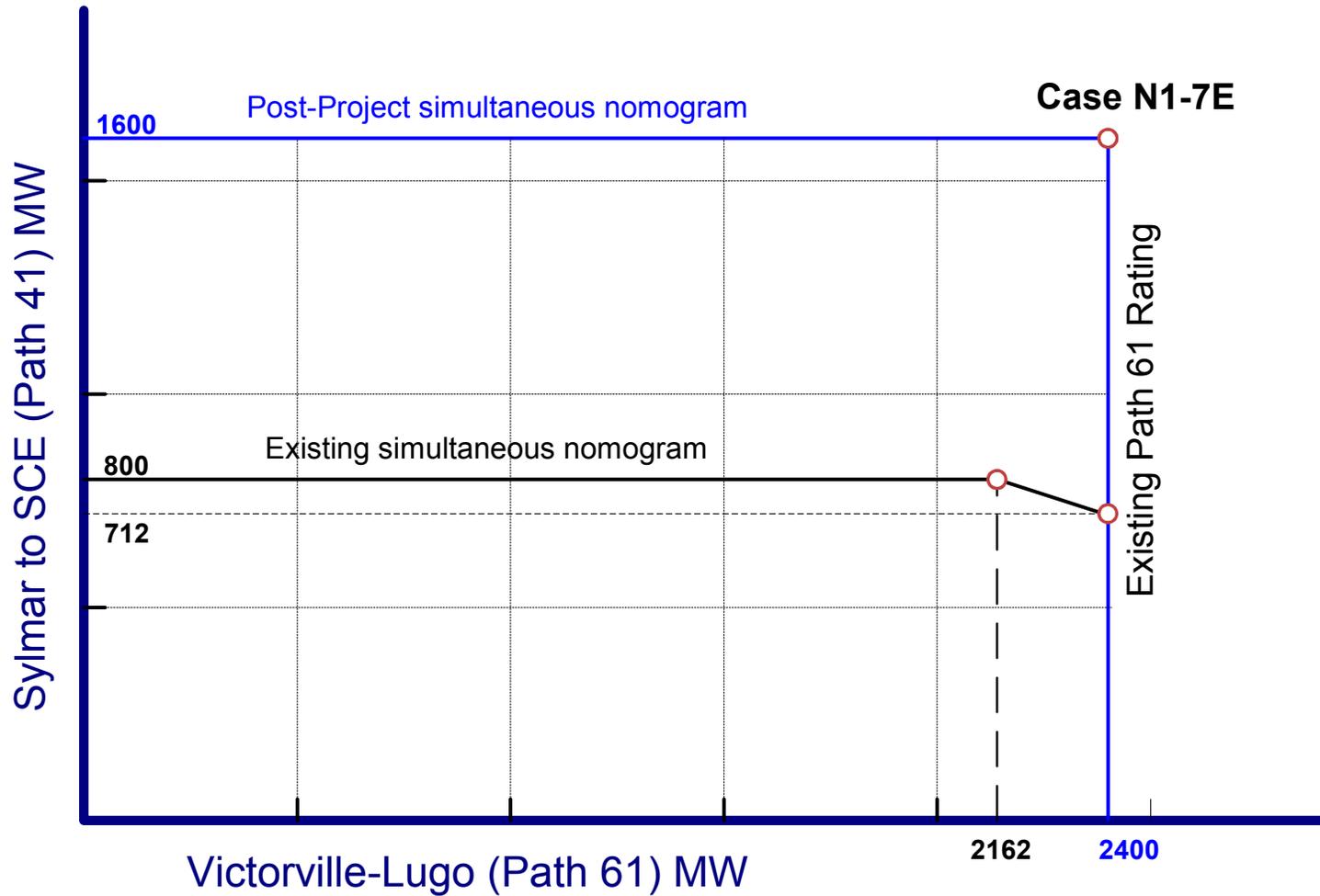
Sylmar Interconnection (WECC Path 41)

- » The Path consists of three 230/220-kV transformers at Sylmar
- » Two of the three transformers are rated at 600/800 MVA (normal/emergency); the third is rated at 900/1156 MVA
- » The non-simultaneous ratings of the Path are 1,600 MW (North-to-South) and 1,600 MW (South-to-North)
- » The rating is based on the emergency thermal ratings of the two existing transformers for the loss of the third transformer
- » The capacity of the Path is divided between:
 - PG&E
 - SCE
 - SDG&E
 - CDWR
 - LADWP
 - Cities of Pasadena, Anaheim, and Riverside

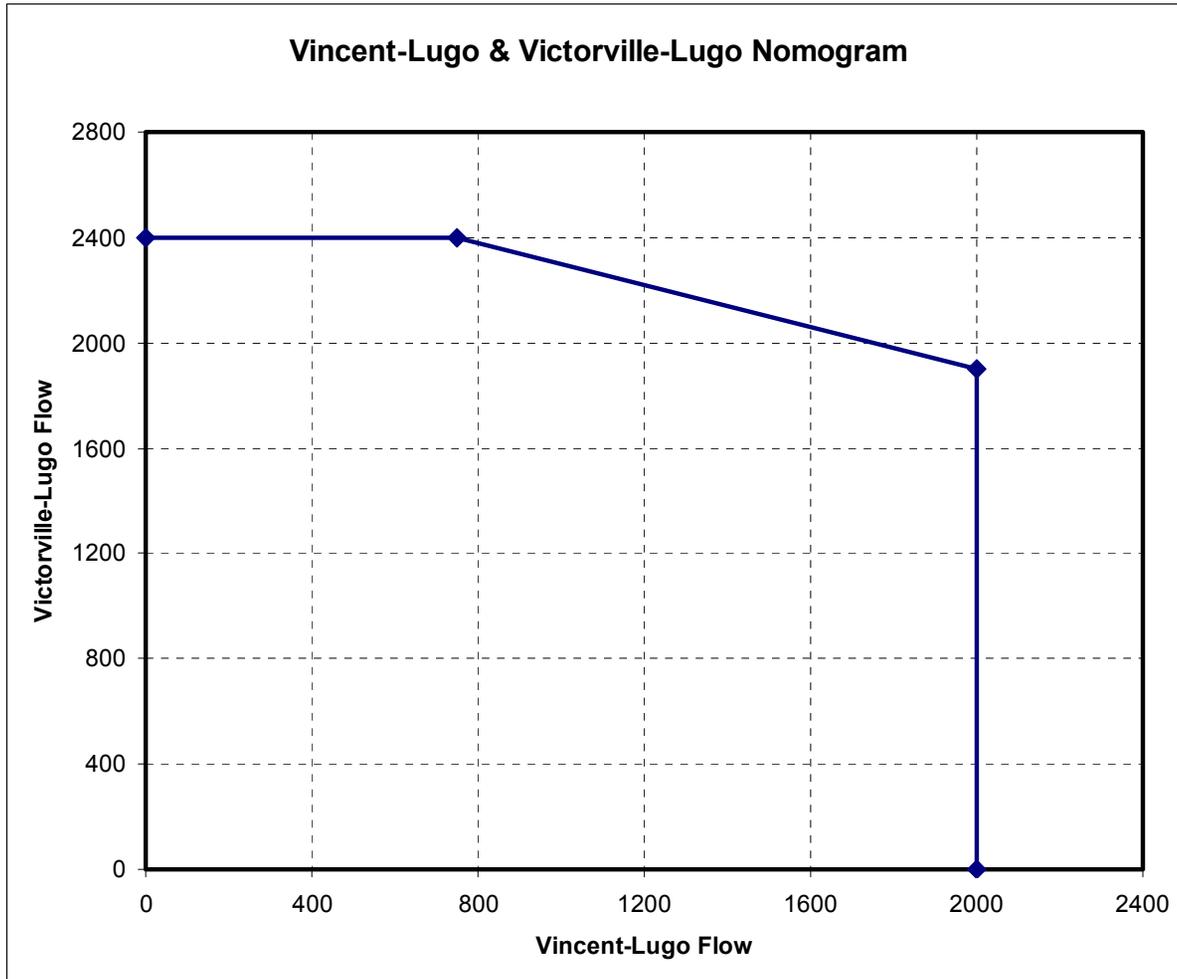
Victorville-Lugo 500-kV Interconnection (WECC Path 61)

- » The Path consists of a single 500-kV line between LADWP's Victorville Substation and Edison's Lugo Substation
- » The non-simultaneous ratings of the Path are 2,400 MW (Victorville-to-Lugo) and 900 MW (Lugo-to-Victorville)
- » The Victorville-Lugo rating is limited by the loss of the Mohave-Lugo or Eldorado-Lugo 500-kV lines
- » The Lugo-Victorville rating is due to thermal limitations on the Inyokern-Searles 115-kV line under N-0 conditions
- » LADWP owns the line from Victorville to the midpoint of the line; Edison owns that portion from the midpoint to Lugo
- » At the present time the current carrying capacity of certain terminal equipment on the line is limited to 3,000 amps

Path 41 vs Path 61 Nomogram Relationship



Path 61 vs Vincent-Lugo Nomogram Relationship



Path 61 Dynamic Nomogram

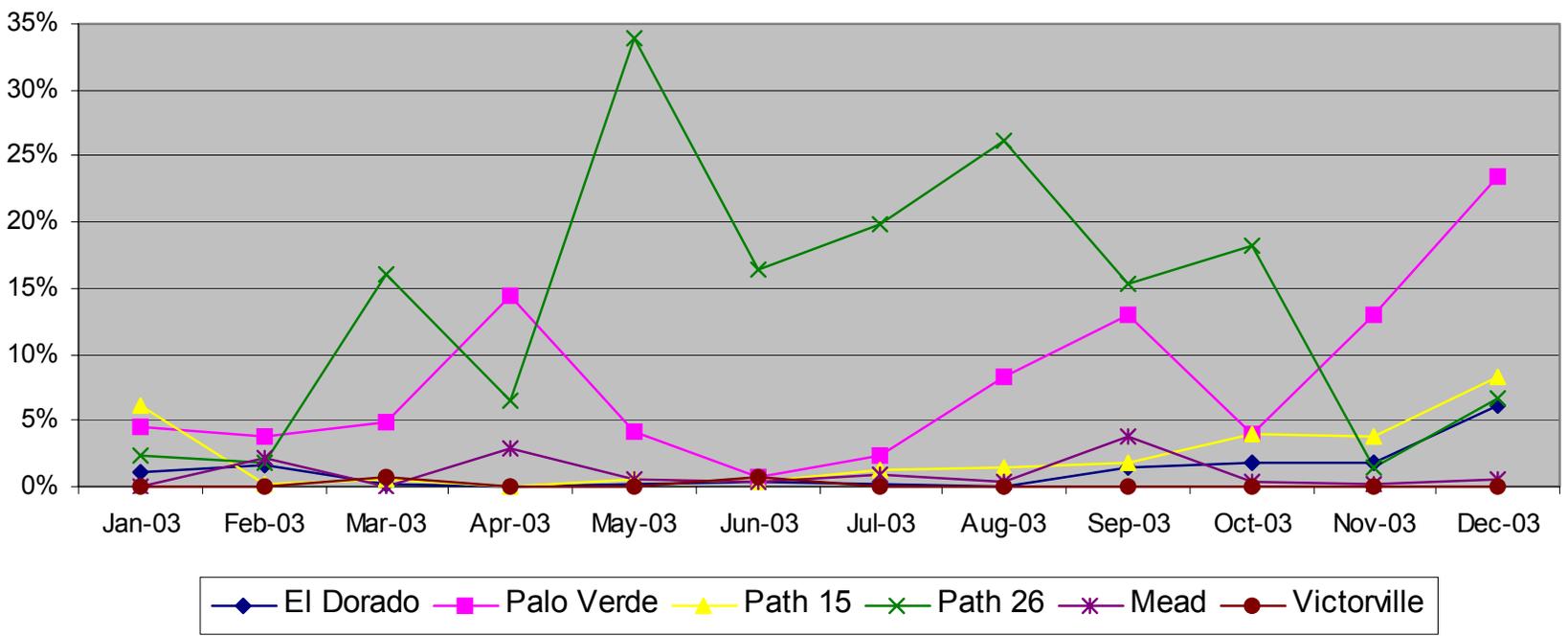
- » Dynamic nomogram exists which monitors actual flows on the Eldorado-Lugo, Mohave-Lugo, Palo Verde-Devers, and Hassayampa-North Gila lines such that an outage on any one of these lines will not load the Victorville-Lugo line above 2,600 MVA

El Dorado – McCullough 500 kV Interconnection (WECC Path 62)

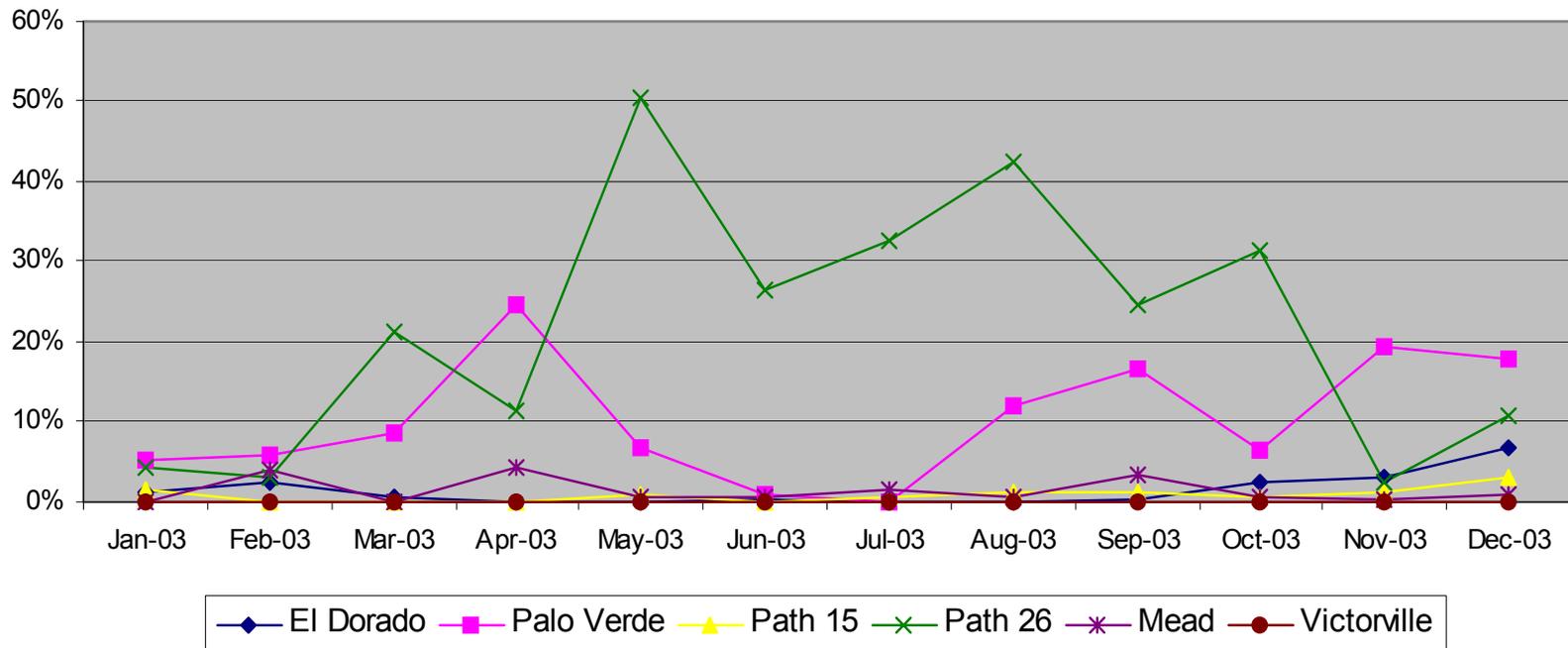
- » 0.6 mile long 500 kV line between El Dorado substation in SCE to McCullough substation in LADWP
- » Rating of this path is 2598 MW in either direction
- » Rating is based on terminal equipment limitations (circuit breaker limit of 3000 A)

Southern California Congestion

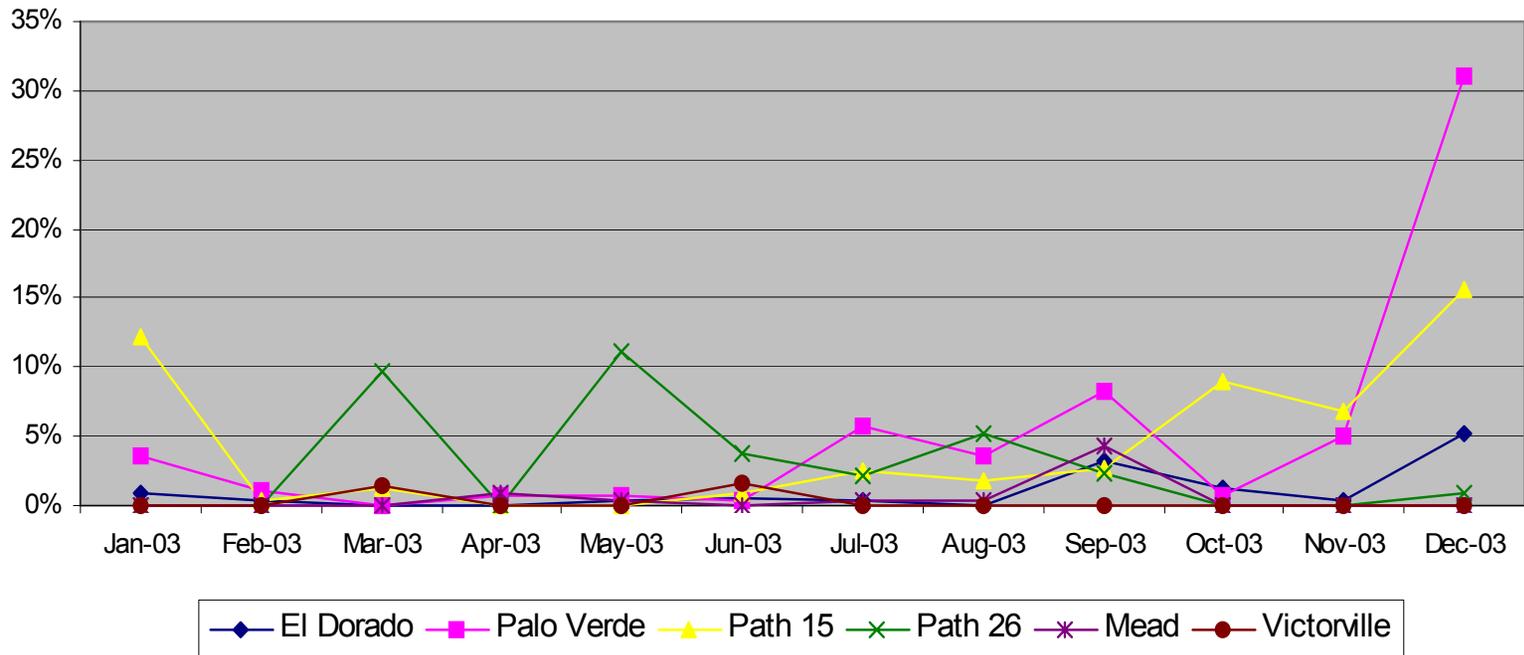
Monthly Congestion Percentages By Branch Group 2003 All Hours



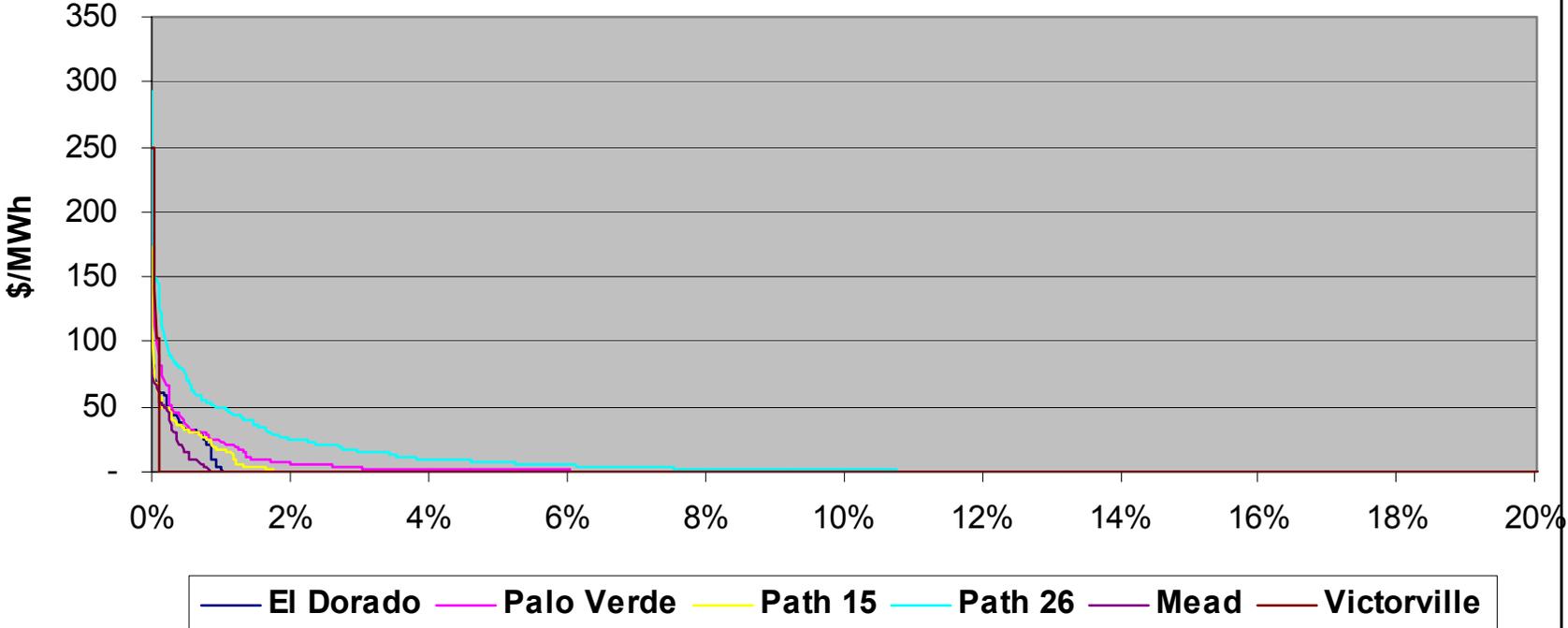
Monthly Congestion Percentages By Branch Group 2003 On Peak Hours



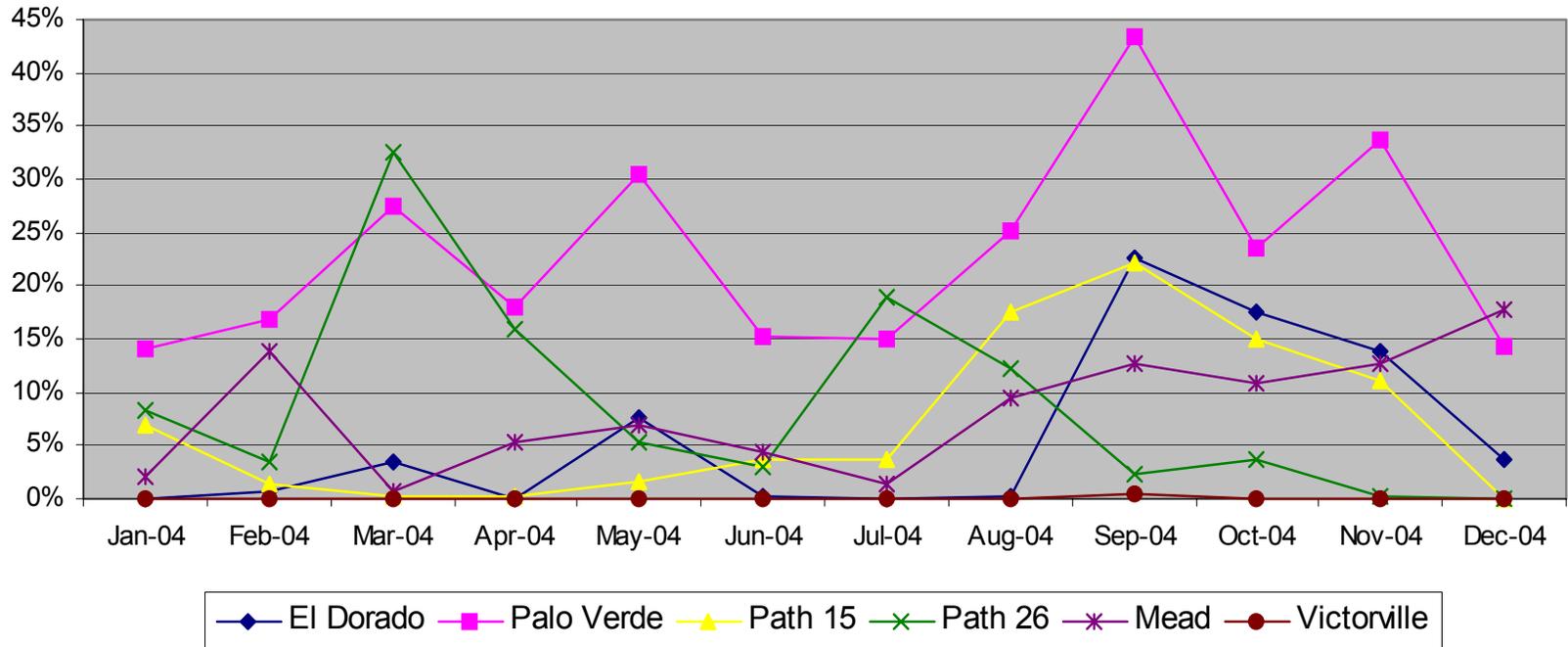
Monthly Congestion Percentages By Branch Group 2003 Off Peak Hours



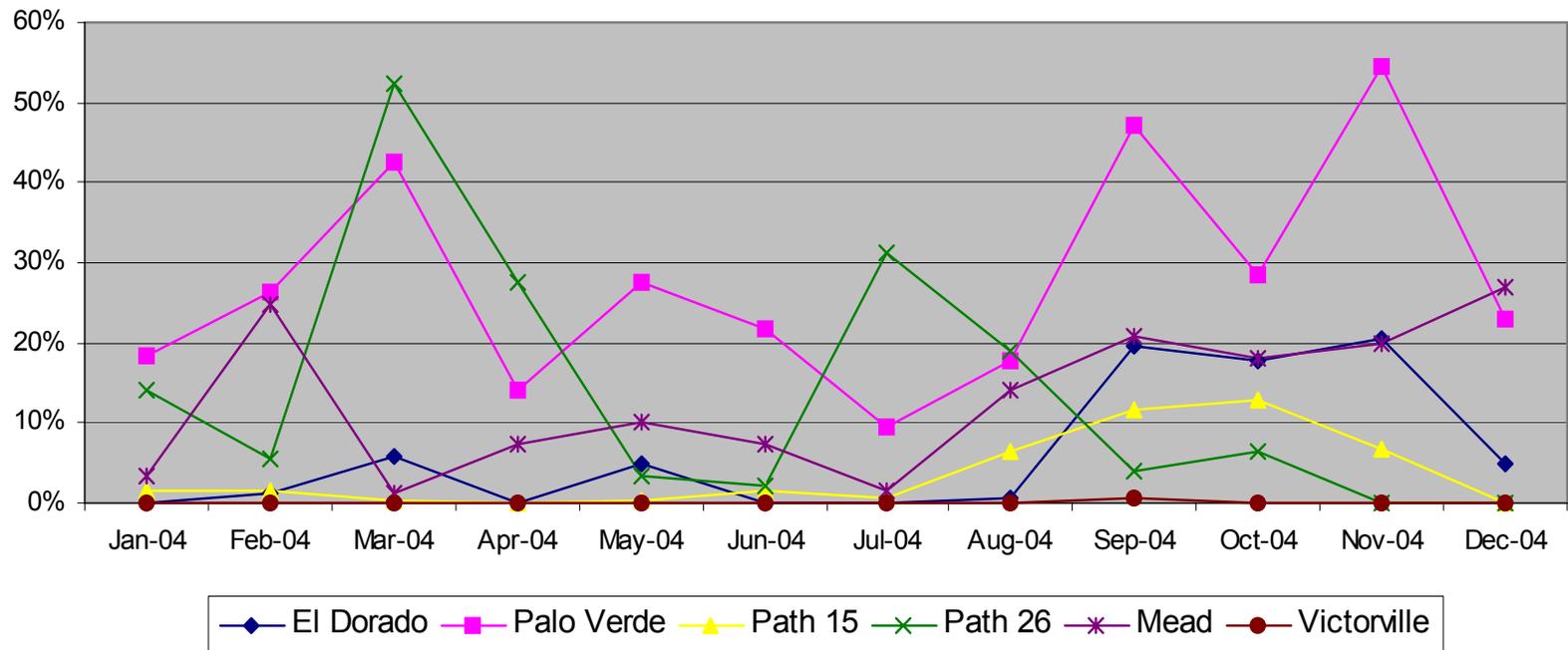
Hourly Congestion Charge as % of Period Hours 2003 All Hours



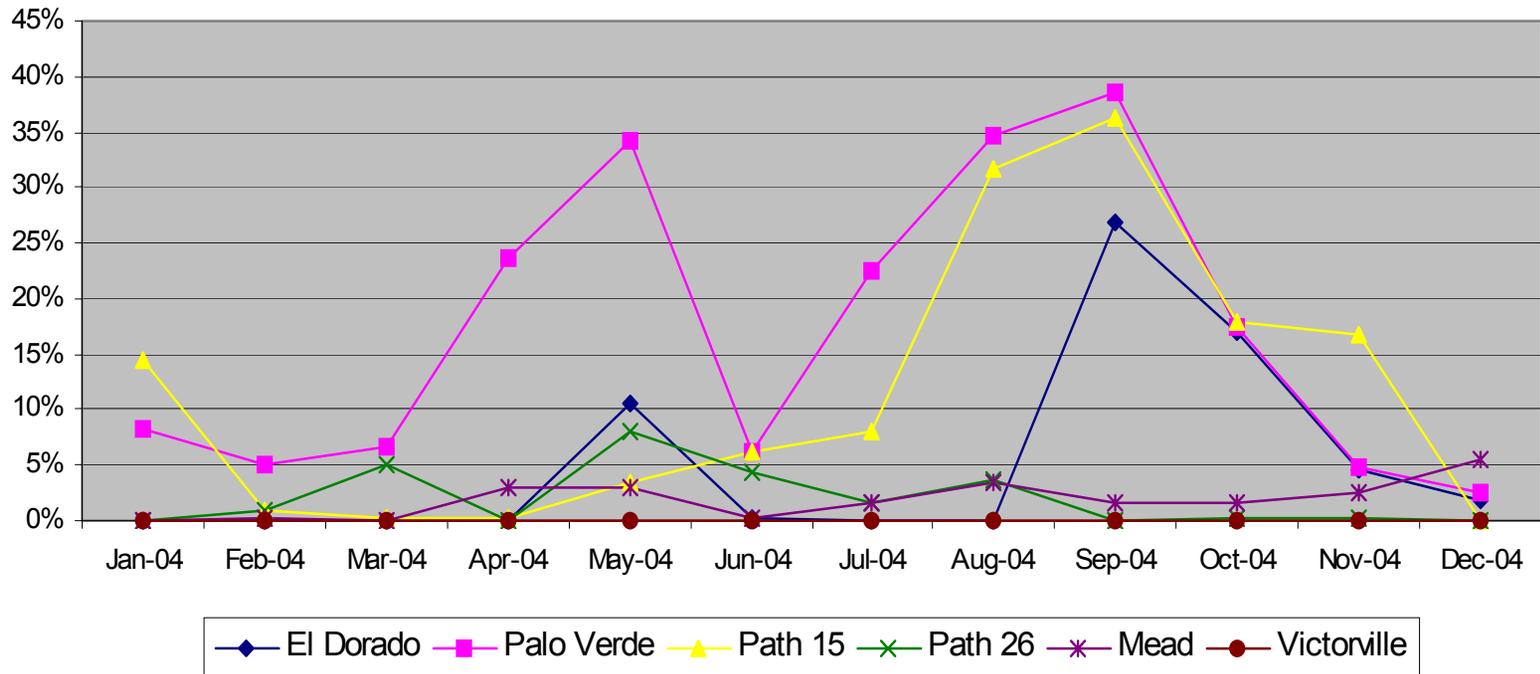
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Monthly Congestion Percentages By Branch Group 2004 On Peak Hours



Monthly Congestion Percentages By Branch Group 2004 Off Peak Hours



Hourly Congestion Charge as % of Period Hours 2004 All Hours

